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10/751,001	12/30/2003	Qinghua Li	884.C07US1	5497

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EXAMINER	
NGUYEN, PHUONGCHAU BA	
ART UNIT	PAPER NUMBER
2416	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/751,001	LI ET AL.	
	Examiner	Art Unit	
	PHUONGCHAU BA NGUYEN	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Specification

1. The disclosure is objected to because of the following informalities:

Specification [0001] discloses a blank space of U.S. patent application serial corresponding to Attorney Docket. Applicant should replace the blank-space with the actual U.S. patent application serial in paragraph [0001] and remove the Attorney Docket Number from paragraph [0001].

Appropriate correction is required.

Claim Objections

2. Claims 1, 3-4, 11, 14, 19-20, 23, 26, 28, 30, 33-34 are objected to because of the following informalities: the colon ":" should be deleted from the claimed language. Note that a colon ":" should be followed by a list of steps/means. Appropriate correction is required.

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to

exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. Claims 1-35 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-41 of copending Application No. 10/748,306. Although the conflicting claims are not identical, they are not patentably distinct from each other because 7, 12, 41, 45-46. The application claims 1-35 merely broaden the scope of the copending application claims 7, 12, 41, 45, 47 by rephrasing "a transmit

antenna is selected as the one providing a best performance metric at a receiver when compared against other transmit antenna options, wherein the performance metric is a signal to noise ratio (SNR)"(copending claims 7 & 47) as ---determining a transmit power level and a receive gain level associated with the first number of communication chains (application claims 3)---; "an apparatus comprising a storage medium in which to store at least executable content; and control logic, coupled to the storage medium, to send a request"(copending claim 41) as ---an article including a machine-accessible medium having associated information, wherein the information, when accessed, resulted in a machine performing: transmitting (application claim 22) ---; "packet"(copending claim 12) as ---response---(application claims 5 & 8) and "transmitting/receiving the packet to/from a remote device as a training symbol via a selected first/second of a plurality of antenna(s)"(copending claim 12-note that the copending claim 1 recited "receiving training symbols attached to a clear to send response") as ---transmitting/receiving a clear to transmit response and the first/second number of training symbols from the first number of communication chains (application claims 5 and 9)---.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

It would have been obvious to one skilled in the art at the time invention was made to eliminate limitations that are not unnecessary for their invention and to rephrase elements so long as the unit or element under different name would perform the same function.

Also, it has been held that the omission of an element and its function is an obvious expedient if the remaining elements perform the same function as before. In re Karlson, 136 USPQ 184 (CCPA). Also note Ex parte Rainu, 168 USPQ 375 (Bd. App. 1969); omission of a reference's element whose function is not needed would be obvious to one skilled in the art.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -

> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-2, 7, 11-12, 16, 20, 23, 26, 29-30, 32, 35 are rejected under 35 U.S.C. 102(e) as being anticipated by Ling (6,771,706).

Regarding claim 1,

Ling (6,771,706) discloses a method, including:

transmitting a first number of training symbols corresponding to a first number of communication chains (122a-122t, fig.3) (figs. 1-2, col.1, lines 43-

56 & see also col.3, line 6-col.5, line 46) to solicit (to receive) a response including a second number of training symbols corresponding to a second number of communication chains (154a-154r, fig.5).

Regarding claims 2, 12 & 29, Ling further discloses wherein the first number of communication chains (122a-122t, fig.3) corresponds to a number of receive chains (154a-154r, fig.5), and wherein the second number of communication chains (154a-154r, fig.5) corresponds to a number of transmit chains (122a-122t, fig.3).

Regarding claims 7, 16 & 27, Ling further discloses wherein the first number of communication chains corresponds to a number of transmit chains (122a-122t, fig.3), and wherein the second number of communication chains corresponds to a number of receive chains (154a-154r, fig.5).

Regarding claim 11.

Ling (6,771,706) discloses a method, including:

transmitting a second number of training symbols corresponding to a second number of communication chains (122a-122t, fig.3) (figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46) in response to receiving a first number of training symbols corresponding to a first number of communication chains (154a-154r, fig.5).

Regarding claim 20.

Ling (6,771,706) discloses An article including a machine-accessible medium (memory 114-fig.3) having associated information, wherein the information, when accessed, results in a machine performing (see 0029 & fig.3):

transmitting a second number of training symbols corresponding to a second number of communication chains (122a-122t, fig.3) (figs. 1-2, col.1,

lines 43-56 & see also col.3, line 6-col.5, line 46) in response to receiving a first number of training symbols corresponding to a first number of communication chains (154a-154r, fig.5).

Regarding claim 23.

Ling (6,771,706) discloses An article including a machine-accessible medium (memory 114-fig.3) having associated information, wherein the information, when accessed, results in a machine performing (see 0029 & fig.3):

transmitting a first number of training symbols corresponding to a first number of communication chains (122a-122t, fig.3) (figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46) to solicit (to receive) a response including a second number of training symbols corresponding to a second number of communication chains (154a-154r, fig.5).

Regarding claim 26.

Ling (6,771,706) discloses an apparatus, including:

a first number of communication chains to transmit to a device (destination node) a first number of training symbols corresponding to the first number of communication chains(122a-122t, fig.3) (figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46) and to solicit (to receive) a response from the device (destination node) including a second number of training symbols corresponding to a second number of communication chains included in the device (154a-154r, fig.5).

Regarding claim 31.

Ling (6,771,706) discloses a system, including:

a first device (source node) having a first number of communication chains to transmit a first number of training symbols corresponding to the first

number of communication chains (122a-122t, fig.3) (figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46); and

a second device (destination node) having a second number of communication chains to receive the first number of training symbols (154a-154r, fig.5), and to respond by transmitting to the first device a second number of training symbols corresponding to the second number of communication chains (figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.6, line 20).

Regarding claim 32, Ling further discloses a first number of antennas corresponding to the first number of communication chains (figs. 1-3 & also see col.1, lines 43-56); and a second number of antennas corresponding to the second number of communication chains (figs.1-3 & 5, col.1, lines 43-56).

Regarding claim 35, Ling further discloses wherein the number of communication chains (122a-122t, figs. 1 & 3) are capable of being coupled to

a number of antennas (124a-124t, figs. 1 & 3) to form a portion of a multiple-input, multiple-output (MIMO) system (figs. 1-3 & 5, col.1, lines 43-56 & see also col.3, line 6-col.6, line 20 and col.11, line 55-col.17, line 60).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3-6, 8-9, 13-15, 17-18, 21-22, 24-25, 28, 30, 33-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling as applied to claims 1, 11, 20, 23, 26, 31 above, and further in view of Whitehill (US 2002/0191573 A1).

Regarding claims 13 & 21, Ling discloses (receiver 150-fig.5) receiving the first number of training symbols (modulation symbols) at the second number of communication chains (154a-154r, fig.5).

Ling does not explicitly disclose receiving a clear to transmit response; and estimating a communications channel associated with the second number of communication chains based on the first number of training symbols.

However, in the same field of endeavor, Whitehill discloses receiving a clear to transmit response (CTS, step 1030-fig.5 & see also 0051-0052) and estimating a channel associated with the second number of communication chains based on the first number of training symbols (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claims 15 & 22, Ling further discloses transmitting the second number of training symbols (modulation symbols) and data (figs. 1-3, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46).

Ling does not explicitly disclose calibrating a number of transmit and receive chains included in the second number of communication chains based on the second number of training symbols.

However, in the same field of endeavor, Whitehill discloses calibrating a number of transmit and receive chains included in the second number of communication chains based on the second number of training symbols (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claim 17,

Ling discloses transmitting the second number of training symbols (modulation symbols) (122a-122t, fig.3, see also figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46).

Ling does not explicitly disclose transmitting a clear to transmit response; and calibrating the second number of communication chains.

However, in the same field of endeavor, Whitehill discloses transmitting a clear to transmit response (CTS, step 1030-fig.5 & see also 0051-0052) transmitting a clear to transmit response; and calibrating the second number of communication chains (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission

parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claim 18, Ling discloses (receiver 150-fig.5) receiving the first number of training symbols (modulation symbols) (154a-154r, fig.5, see also figs. 1-2, col.1, lines 43-56 & see also col.3, line 6-col.5, line 46).

Ling does not explicitly disclose receiving a request to transmit; and estimating a channel associated with the second number of communication chains.

However, in the same field of endeavor, Whitehill discloses receiving a request to transmit response (RTS, steps 1000,1010, 1030-fig.5 & see also 0051-0052) and estimating a channel associated with the second number of communication chains (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the

invention was made to apply Whitehill's teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claims 8 & 24, Ling does not explicitly disclose transmitting a request to transmit and the first number of training symbols; and calibrating the first number of communication chains.

However, in the same field of endeavor, Whitehill discloses transmitting a request to transmit response (RTS, step 1000-fig.5 & see also 0050) transmitting a clear to transmit response and the first number of training symbols from the first number of communication chains; and calibrating the first number of communication chains (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of

determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claims 9, 25 & 34, Ling discloses (receiver 150-fig.5) receiving the second number of training symbols.

Ling does not explicitly disclose receiving a clear to transmit response and estimating a channel associated with the first number of communication chains.

However, in the same field of endeavor, Whitehill discloses receiving a clear to transmit response (CTS, step 1030-fig.5 & see also 0051-0052) and estimating a channel associated with the first number of communication chains (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to

apply Whitehill's teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claim 3, Ling does not explicitly disclose receiving a request to transmit at the first number of communication chains; and determining a transmit power level and a receive gain level associated with the first number of communication chains.

However, in the same field of endeavor, Whitehill (US 2002/0191573 A1) discloses (a destination node) receiving a request to transmit (RTS) at the first number of communication chains (i.e.., 154a-154r, fig.5 of Ling), see 0050 & step 1000-fig.5; and determining a transmit power level and a receive gain level (i.e., determining the power-level and gain, see also 0053 and steps 1010 & 1050-fig.5) associated with the first number of communication chains, see 0051-0052. Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of determining power and

gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claims 4 & 14, Ling does not explicitly disclose determining multiple transmit power levels and receive gain levels associated with the first number of communication chains.

However, in the same field of endeavor, Whitehill discloses determining multiple transmit power levels and receive gain levels (i.e., determining the power-level and gain, see also 0053 and steps 1010 & 1050-fig.5) associated with the first number of communication chains (i.e.., 154a-154r, fig.5 of Ling), see also 0051-0052. Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claims 5, 28 & 33, Ling discloses transmitting the first number of training symbols (modulation symbols) from the first number of communication chains (122a-122t, fig.3).

Ling does not explicitly disclose transmitting a clear to transmit response (claim 5) and calibrating a number of transmit and receive chains included in the first number of communication chains (claims 5, 28 & 33).

However, in the same field of endeavor, Whitehill discloses transmitting a clear to transmit response (CTS, step 1030-fig.5 & see also 0051-0052) transmitting a clear to transmit response and the first number of training symbols from the first number of communication chains; and calibrating a number of transmit and receive chains included in the first number of communication chains (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's teaching of determining power and

gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

Regarding claims 6 & 30, Ling discloses (receiver 150-fig.5) receiving the second number of training symbols and data.

Ling does not explicitly disclose estimating a communications channel associated with the first number of communication chains based on the second number of training symbols.

However, in the same field of endeavor, Whitehill discloses estimating a communications channel associated with the first number of communication chains based on the second number of training symbols (0051-0052 wherein the destination node adjusted the request power from the source node to avoid fading and interference-emphasis added). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Whitehill's

teaching of determining power and gain to Ling's system with the motivation being to optimize the transmission parameters for subsequent packet transmission and to avoid immediate congestion problem.

9. Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ling as applied to claims 1 and 11 above, and further in view of Schramm (US 2002/0110138 A1).

Regarding claims 10 & 19, Ling does not explicitly disclose transmitting a header including a length specification corresponding to the first number of training symbols.

However, in the same field of endeavor, Schramm (US 2002/0110138 A1) discloses transmitting a header including a length specification (i.e., 3.2 μs-fig.1b) corresponding to the first number of training symbols (fig.1b-wherein a header includes a length corresponding to the first number of training

symbols). Therefore, it would have been obvious to an artisan at the time of the invention was made to apply Schramm's teaching of OFDM frame's header having the length corresponding to training symbols to Ling's system with the motivation being to allow time duration for channel estimation to provide an accurate link quality measure of a transmission link in a OFDM transmission system.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to PHUONGCHAU BA NGUYEN whose telephone number is (571)272-3148. The examiner can normally be reached on Monday-Friday from 7:00 a.m. to 3:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PHUONGCHAU BA NGUYEN/
Examiner, Art Unit 2416

/Ricky Ngo/
Supervisory Patent Examiner,
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